6. COMPREHENSIVE FINDINGS AND ANALYTICAL RESULTS

This section presents a summary of the historical and 2005 facility investigation results for the Site. This data presented is for concrete samples of the on-site concrete floors and pavement, soil, soil gas, and groundwater collected at each AOI.

The analytical results of concrete samples are shown on Figures 4-1 and 4-2. The results of lead analyses on soil samples are shown on Figures 6-1 through 6-5. A summary of the additional soil sample data compared to the delineation criteria is shown on Figures 7-1 through 7-4 and a summary of the soil gas sample data compared to the delineation criteria is shown on Figures 8-1 through 8-3. Select cross sections containing geologic classification and soil sample results are presented on Figures 9-1 through 9-13. Groundwater analytical results are shown on Figure 10.

6.1 Concrete Sample Results

Concrete chip and concrete core samples were collected of foundations across the Site to assess concentrations of chemicals in on-site concrete for potential reuse on-site and off-site disposal options. Concrete samples were analyzed for total metals, and selectively for leachable concentrations of metals (as soluble threshold limit concentration [STLC] and toxicity characteristic leaching procedure [TCLP]), PCBs, and SVOCs as indicated in Table 1-2. The analytical results for lead are shown on Figure 6 and summarized in Table 2. In addition, Figure 4 shows which concrete areas for disposal or re-use as follows:

- Remove and crush on-site for reuse on-site,
- Non-hazardous to be removed and disposed of off-site, or
- Hazardous by California, RCRA or TSCA regulations to be removed and disposed of off-site.
- Note: Further evaluation is necessary in some areas to assess concentrations of chemicals of concern and complete classification of waste for off-site disposal or reuse.

6.2 Mill Strip/Lead Melting Into Coils – AOI 1

AOI Description: The Mill Strip was located in the north-central portion of the Main Production Building (Figure 2). This area contained the initial process equipment for shaping the lead plates in the battery production. A soluble oil (98 percent water based, 2 percent oil) was used to lubricate the lead as it was rolled into gridded plates and perforated.

Previous Investigation History: A previous investigation of lead in concrete in the area did not find concrete to be impacted with concentrations of lead above the remedial action level (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0014 and DP0015) were advanced to a total depth of 5 feet bgs (Figure 3). Soil and soil gas samples were collected from both borings.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths to 18 inches bgs and analyzed for lead, pH, and VOCs (Table 1-3).
- VOCs were not detected above laboratory reporting limits in soil samples collected and analyzed (Table 4, Figure 7).
- Lead was detected in the two samples analyzed at concentrations above the laboratory detection limit (J flagged). The maximum concentration was reported at 3.35J mg/kg in sample DP0014-SS-000-01 01 at 0.3 foot (Table 5, Figure 6).
- In the two samples analyzed, pH was reported at 9.08 and 7.98 (Table 6).

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 feet bgs in both borings (Table 1-5).
- Seventeen VOCs were detected. These VOCs and their maximum detected concentrations are listed below (Table 3, Figure 8).

VOC Soil Gas Compound	Boring Number	Sample Depth (feet bgs)	Max. Concentration ($\mu g/m^3$)
1,1,1-TCA	DP0014	5	140
1,1-DCA	DP0014	5	180
1,1-Dichloropropene	DP0014	5	130
1,2-Dichloropropane	DP0014	5	63
1,3-Dichloropropane	DP0014	5	120
2,2-Dichloropropane	DP0014	5	64
Carbon Tetrachloride	DP0014	5	200* (84.6)
Chlorobenzene	DP0014	5	68
Chloroethane	DP0014	5	170
Chloroform	DP0014	5	150
Chloromethane	DP0014	5	150
Methylene Chloride	DP0014	5	170
PCE	DP0014	5	180
Toluene	DP0014	5	140
Trans-1,2-Dichloroethene	DP0014	5	54
Vinyl Chloride	DP0014	5	110* [44.8]
Total Xylenes	DP0014	5	260

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: Review of the analytical data indicates that chemical concentrations are delineated with the exception of VOCs in soil gas samples. Considering soil gas data in AOIs 9 and 15, it appears that delineation is not complete vertically or laterally; therefore, additional soil gas sampling is recommended.

6.2.1 Plate Pasting (SWMUs Nos. 4 and 5) - AOI 2

AOI Description: The Plate Pasting and Manufacturing Area was located south of AOI 1 in the north-central portion of the Main Production Building (Figure 2). Part of the process where lead oxide was mixed with sulfuric acid to form a paste that is used to create either negative or positive battery plates was performed in this area.

Previous Investigation History: Previous investigations in this area detected lead concentrations up to 14,400 mg/kg in concrete samples (Figure 4).

Haley & Aldrich 2005 Investigation Results: Three borings (DP0025, DP0027, and DP0028) were advanced to a total depth of 5 feet bgs (Figure 3). Soil gas samples were not collected because VOCs were not considered a likely chemical of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths to 18 inches bgs and analyzed for lead, pH, and VOCs (Table 1-3).
- VOCs were not detected above laboratory detection limits in the two soil samples collected and analyzed (Table 4, Figure 7).
- Lead was detected in each of the three samples analyzed at concentrations above the laboratory detection limit (J flagged). The maximum lead concentration reported was 4.85J at 0.3 foot bgs in sample DP0028 SS-000-01 (Table 5, Figure 6).
- In the three samples analyzed, pH ranged between 8.18 and 8.78 at 1 foot bgs (Table 6).

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 feet bgs at borings DP0027 and DP0028 (Table 1-5).
- The VOC toluene was detected at a concentration of 14 micrograms per cubic meter ($\mu g/m^3$) in boring DP0028 at 5 feet bgs (Table 3, Figure 8).

Characterization Complete: The reported chemical concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.2 Scrap Conveyor (SWMU No. 4) - AOI 3

AOI Description: The Scrap Conveyor Area was located south of AOI 2 in the center portion of the Main Production Building (Figure 2). This area contained process equipment for the removal of scrap waste lead oxide slurry collected in channels in this area (SWMU No. 4).

Previous Investigation History: Previous investigations in this area reported lead in concrete samples at a maximum concentration of 41,700 mg/kg (Figure 4).

Haley & Aldrich 2005 Investigation Results: One boring (DP0040) was advanced to 18 inches bgs at this AOI (Figure 3). A soil gas sample was not collected because VOCs were not considered a likely chemical of concern at this location.

Summary of Soil Sampling

- Soil samples were collected in several locations from near ground surface to depths of 18 inches bgs (Table 1-3).
- Analysis of samples for lead detected at concentrations up to 10.4 mg/kg in the near surface (0.3 foot bgs) sample (Table 5, Figure 6).

Characterization Complete: The reported chemical concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.3 Steam Oven Chambers – AOI 4

AOI Description: The Steam Ovens Chambers Area was located in the central part of the Main Production Building east of AOI 3 (Figure 2).

Previous Investigation History: Previous investigations of lead in concrete in the Main Production Building did not focus on this area because it was not a lead processing area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings were advanced to a total depth of 5 feet bgs. Both soil and soil gas samples were collected from borings DP0030 and DP0031 (Figure 3).

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead and pH (Table 1-3).
- Lead was not detected in laboratory analyses above the delineation criteria and the maximum lead concentration reported was 48.8 mg/kg in boring DP0030 at 0 to 0.3 foot bgs (Table 5, Figure 6).
- pH analysis of the two samples from 1 foot bgs had results of 9.17 and 9.26 (Table 6).

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 feet bgs (Table 1-5).
- Analytical results of soil gas samples indicated 1,2-dichloroethane and toluene were detected at a concentration of 93 $\mu g/m^3$ and 59 $\mu g/m^3$, respectively (Table 3, Figure 8).

Characterization Complete: The reported concentrations are less than the delineation criteria. No additional sampling is recommended.

6.2.4 Red Lead Oxide Tank Area – AOI 5

AOI Description: The Red Lead Oxide Tank Area was located in the northwest portion of the Main Production Building west of AOI 2 (Figure 2). Red lead oxide was generated for use in the manufacture of battery plates in this area.

Previous Investigation History: Previous investigations in this area indicated lead at a reported maximum concentration of 3,420 mg/kg in concrete chip samples (Figure 4).

Haley & Aldrich 2005 Investigation Results: One boring (DP0034) was advanced to a total depth of 18 inches bgs (Figure 3). A soil gas sample was not collected because VOCs were not considered a likely chemical of concern at this location based on historical use.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead (Table 1-3).
- Lead was not detected at concentrations above the delineation criteria and the maximum reported concentration was 6.35 mg/kg at 0-0.3 feet bgs in boring DP0034 (Table 5, Figure 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. No additional sampling is recommended.

6.2.5 Oxide Conveyors (2) - AOI 6

AOI Description: The Oxide Conveyors Area was located in the northwest portion of the Main Building adjacent and southwest of AOI 5 (Figure 2). Red lead oxide was generated for use in the manufacture of battery plates in this area.

Previous Investigation History: Previous investigations in this area detected lead at a maximum concentration of 11,200 mg/kg in concrete chip samples (Figure 4).

Haley & Aldrich 2005 Investigation Results: Seven borings (DP0035, DP0039, DP0120, DP0121, DP0122, DP0123, and DP0124) were advanced to varying depths up to a total depth of 10 feet bgs for the collection of soil samples (Figure 3). A soil gas sample was not collected because VOCs were not considered a likely chemical of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple depths and analyzed for lead (Table 1-3).
- Lead was detected in soil samples above the delineation criteria in 4 of 19 samples analyzed. The maximum lead concentration was 1,950 mg/kg in boring DP0039 at 1 foot bgs (Table 5, Figure 6).

Characterization Complete: The reported chemical concentrations of lead are greater than the delineation criteria at DP0039 and DP0123; however, lead concentrations decrease to the east from DP0039 to DP0123. Considering the totality of the soil lead data at this AOI and adjacent AOIs 2, 3, and 7, it appears that delineation is deemed complete. Therefore, no further soil sampling is recommended prior to remedial activities and additional sampling can be performed during remedial work..

6.2.6 Lead Melting Pots (6) - AOI 7

AOI Description: The Lead Melting Pots Area was located in the northwest portion of the Main Building adjacent and south of AOIs 5 and 6 (Figure 2). The melting pots were used to melt lead ingots.

Previous Investigation History: Previous lead investigations of this area were not performed because it was inaccessible due to demolition activities going on at that time (Figure 4).

Haley & Aldrich 2005 Investigation Results: Five borings (DP0125, DP0126, DP0036, DP0037, and DP0038) were advanced to varying depths up to a total depth of 5 feet bgs (Figure 3). Soil gas samples were not collected because VOCs were not considered likely chemicals of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple depths and analyzed for lead.
- Lead was detected above the delineation criteria in one of the 11 samples analyzed. The maximum concentration of lead was 1,320 mg/kg in boring DP0037 at 1 foot bgs (Table 5, Figure 6).

Characterization Complete: The reported chemical concentrations of lead are greater than the delineation criteria at DP0037. Considering the totality of the soil lead data at this AOI and adjacent AOIs 2, 3, 5, and 6, it appears that delineation is complete. Therefore, no further soil sampling is recommended.

6.2.7 Plastic Container Molding and Cover Manufacturing (SWMU No. 6)- AOI 8

AOI Description: The Plastic Container Molding and Cover Manufacturing Area was located south of AOI 4 in the south-central portion of the Main Production Building (Figure 2). This AOI was also associated with the Hydraulic Oil Collection Channel, SWMU No. 6.

Previous Investigation History: Previous investigations of concrete floors for lead in the Main Production Building did not find significant concentrations of lead in concrete samples collected and analyzed in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Five borings (DP0041, DP0042, DP0043, DP0044, and DP0045) were advanced to total depths of 5 feet bgs. Additionally, seven grab samples (GS0027, GS0030, GS0031, GS0032, GS0033, GS0037, and GS0039) were collected following the removal of the concrete floor during demolition (Figure 3). Soil and soil gas samples were collected at all five borings locations and soil samples were collected at the grab sample locations.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead, CAM-17 metals, TPH, SVOCs, VOCs, PCBs, and PAHs (Table 1-3).
- Lead was not detected above the delineation criteria in the seven samples analyzed. The maximum concentration of lead detected was 28.5 mg/kg in sample GS0027 at 1 foot bgs (Table 5, Figure 6).
- VOCs and SVOCs were not detected above laboratory reporting limits in soil samples analyzed (Table 4, Figure 7).
- Metals were not detected at concentrations above the preliminary remediation goals.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Arsenic	GS0027	2	1.50J
Chromium	GS0027	1	12.2
Zinc	GS0027	1	135

- Total TPH carbon chain analysis was performed in eight grab samples and reported above laboratory detection limits in four samples. The highest concentration was reported at an estimated concentration of greater than 50,000 mg/kg total TPH (C4-C40) for sample GS0027 at 1 foot bgs and greater than 23,900 mg/kg for sample GS0031 at 1 foot bgs (Table 4).
- Four samples were analyzed for PCBs, and Aroclor-1248 was detected in one sample at 0.202 mg/kg (GS0039 at 1 foot bgs) (Table 4, Figure 7).
- Two samples were analyzed for PAHs, and PAHs were reported above laboratory detection limits in one sample. Maximum concentrations are listed below and in Table 4, Figure 7.

PAH Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Acenaphthene	GS0027	1	0.025
Anthracene	GS0027	1	0.022
Benzo(a)anthracene	GS0027	1	0.252
Benzo(a)pyrene	GS0027	1	0.015J
Benzo(b)fluoranthene	GS0027	1	0.014J
Chrysene	GS0027	1	0.129
Fluoranthene	GS0027	1	0.148
Fluorene	GS0027	1	0.0.26
Phenanthrene	GS0027	1	0.369
Pyrene	GS0027	1	0.116

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 feet bgs (Table 1-5).
- Analytical results of soil gas samples indicated that two VOCs were detected (Table 3, Figure 8). VOCs reported and their maximum concentrations are shown below. The other VOCs were below the laboratory detection limits.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu g/m^3$)
1,2-Dichloroethane	DP0044	5	88
Benzene	DP0041/DP0042	5	100J

Characterization Complete: The reported chemical concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.8 Power House/Steam Oven Boiler Oil Recovery Unit – AOI 9

AOI Description: The Power House/Steam Oven Boiler Oil Recovery Unit was located in northwest corner of the Main Production Building (Figure 2). This area contained the power generation and steam production facilities.

Previous Investigation History: Previous investigations of concrete in this area detected lead at a maximum concentration of 2,000 mg/kg (Figure 4). Historical information also indicated that dielectric oil was used in this area.

Haley & Aldrich 2005 Investigation Results: Four borings were advanced in this area, DP0019 and DP0021 to 2 feet bgs and DP0018 and DP0020 to 5 feet bgs (Figure 3). Soil gas samples were collected from two of the borings.

Summary of Soil Sampling

- Soil samples were collected at multiple locations from near surface to depths of less than 2 feet bgs and analyzed for lead, VOCs, SVOCs, and PCBs (Table 1-3).
- Lead was detected in the five samples analyzed from a range of 4.10J mg/kg to 12 mg/kg at 0.3 foot bgs in sample DP0021 (Table 5, Figure 6).
- VOCs and PCBs were not detected above laboratory reporting limits in soil samples analyzed (Table 4, Figure 7).
- The SVOC pentachlorophenol was detected above the delineation criterion (1 mg/kg) at a concentration of 4.09 mg/kg in boring location DP0019 at 1 foot bgs (Table 4, Figure 7). No other SVOCs were detected in samples analyzed.

Summary of Soil Gas Sampling

- Soil gas samples were collected in boring locations DP0018 and DP0020 at 3 feet and 5 feet bgs, respectively (Table 1-5).
- Analytical results indicated that VOCs were present at concentrations below delineation criteria for six compounds (Table 3, Figure 8). The maximum concentrations reported for the detected compounds are listed below.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Max. Concentration ($\mu g/m^3$)
1,1,1-TCA	DP0020	5	23
Chloroethane	DP0020	5	60
CFC-12	DP0018	3	330
Ethylbenzene	DP0018	3	91
Toluene	DP0018	3	550
Total Xylenes	DP0018	3	45

Characterization Complete: The reported chemical concentrations of boring samples are less than the delineation criteria with the exception of the SVOC pentachlorophenol. Due to the relatively immobile nature of pentachlorophenol, and considering the totality of the soil results at this AOI and adjacent AOIs 10 and 16, it is concluded that pentachlorophenol concentrations at this AOI are delineated laterally and vertically. Therefore, no further soil sampling is recommended.

6.2.9 Forklift Repair Area/Battery and Propane Soluble Machine Oil Recovery Tanks (SWMU No. 9) - AOI 10

AOI Description: The Forklift Repair Area/Battery and Propane Area was located west of AOI 1 in the northwest portion of the Main Production Building (Figure 2). Associated with this area were historical Soluble Oil Collection and Processing Tanks (SWMU No. 9) that were decommissioned prior to facility closure.

Previous Investigation History: Previous investigations of the Main Production Building tested concrete for lead in this area, but did not identify lead concentrations above delineation criteria in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0016 and DP0017), were advanced up to a total depth of 5 feet bgs in this area. Soil gas samples were also collected from both borings. Additionally, four grab samples (GS0034, GS0035, GS0040, and GS0041) were collected during demolition of the floor slab at depths ranging between 1 and 5 feet bgs (Figure 3).

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 5 feet and analyzed for lead, CAM metals, TPH, PCBs, VOCs, SVOCs, and PAH (Table 1-3).
- Lead was detected in the three samples analyzed. Lead was not detected above the clean up criteria and the maximum concentration reported was 17.7 mg/kg in sample GS0034 at 1 foot bgs (Table 5, Figure 6).
- Two Site-related metals were reported above the laboratory detection limits in one sample analyzed. Maximum concentrations are listed below.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Chromium	GS0034	1	12.8
Zinc	GS0034	1	44.4

- TPH was below the laboratory detection limit in one grab sample analyzed.
- The PCB Aroclor-1248 was detected and above the delineation criterion in five of the nine grab samples analyzed. Concentrations ranged from 18.6 mg/kg to 27,600 mg/kg (GS0035 at 1 foot bgs) (Figure 7).
- Analytical results indicated that VOCs were not detected above laboratory detection limits (Table 4, Figure 7).
- SVOCs were not detected above the clean up criteria however, five SVOCs were detected in GS0034 at 1 foot bgs. These SVOCs and their maximum concentrations are listed below and in Figure 7.

SVOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Benzo(a)pyrene	**GS0034**	**1**	**0.012J**
Chrysene	**GS0034**	**1**	**0.25J**
Fluoranthene	**GS0034**	**1**	**0.4J**
Phenanthrene	**GS0034**	**1**	**0.3J**
Pyrene	**GS0034**	**1**	**0.439J**

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 feet bgs (Table 1-5).
- The VOCs 1,2-dichloroethane, chloroethane and toluene were detected at low concentrations.
- Concentrations of the three VOCs detected did not exceed the delineation criteria. Maximum concentrations of 1,2-Dichloroethane, chloroethane and toluene reported were 59 $\mu g/m^3$.70 $\mu g/m^3$ and 36 $\mu g/m^3$ respectively (Table 3, Figure 8).

Characterization Complete: The reported chemical concentrations are less than the delineation criteria with the exception of the PCB Aroclor-1248. Delineation of PCBs is not complete vertically and horizontally. Therefore, additional soil sampling is recommended to delineate the extent of PCB impacts.

6.2.10 Acid Filling Area and Sump - AOI 11

AOI Description: The Acid Filling Area and Sump was located in the southeast corner of the Main Production Building (Figure 2). This area contained sulfuric acid that was used to prepare the lead sulfate paste used in the manufacture of battery plates.

Previous Investigation History: A previous investigation of lead in concrete in this area did not indicate lead concentrations above the delineation criteria(Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings were advanced in this area, DP0049 to 18 inches bgs and DP0050 to 5 feet bgs (Figure 3). A soil gas sample was not collected because VOCs were not considered a likely chemical of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead and pH (Table 1-3).
- The maximum concentration of lead detected (13.2 mg/kg) was below the delineation criteria (Table 5, Figure 6).
- All three samples collected were analyzed for pH; results ranged from 8.07 to 12.5 (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Based on the former operations at this AOI, it is anticipated that elevated pH are limited. No further soil sampling is recommended.

6.2.11 AGM Water Bath – AOI 12

AOI Description: The AGM Water Bath was located in the southwest corner of the Main Production Building (Figure 2).

Previous Investigation History: A previous investigation of concrete in the area for lead did not detect lead concentrations above the delineation criteria (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings were advanced to 2 feet bgs (DP0057 and DP0058) (Figure 3). A soil gas sample was not collected because VOCs were not considered a likely chemical of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead and pH (Figure 1-3).
- Lead concentrations were below the delineation criteria with a maximum of 172 mg/kg in boring DP0058 at 0-0.3 feet bgs (Table 5, Figure 6).
- pH was reported at 8.26 and 8.17 in the two samples analyzed (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.12 Cast on Strap (C.O.S.) Mainline Plate Group – AOI 13

AOI Description: The Cast on Strap (C.O.S.) Mainline Plate Group Assembly was located adjacent to the east wall in the southern end of the Main Production Building (Figure 2). This area contained equipment to cast straps around battery plates during production.

Previous Investigation History: Previous investigations of concrete in this area indicated lead at a maximum concentration of 9,580 mg/kg (Figure 4).

Haley & Aldrich 2005 Investigation Results: Three borings (DP0046, DP0047, and DP0048) were advanced to 18 inches bgs (Figure 3). Additionally, one grab sample was collected during demolition of the floor slab at depths ranging from 1 to 3 feet bgs. A soil gas sample was not collected because VOCs were not considered as likely chemicals of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead, CAM metals, TPH, PCBs, VOCs, SVOCs, and PAHs (Table 1-3).
- Lead was reported above the laboratory detection limits in the 9 samples analyzed. Lead concentrations were below the delineation criteria with a maximum of 180 mg/kg in DP0046 at 0-0.3 feet bgs (Table 5, Figure 6).
- One grab sample was analyzed for CAM-17 metals. Metals concentrations were not above the delineation criteria (Table 4). The maximum concentrations of Site-related metals are listed below.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Chromium	GS0036	1	14.9
Zinc	GS0036	1	50.5

- PCBs were analyzed in two grab samples collected. Aroclor-1248 was not detected above the delineation criterion with concentrations of 0.040J mg/kg and 0.196 mg/kg.
- TPH, VOCs, SVOCs, and PAHs were below the laboratory detection limit for the one sample collected and analyzed (Table 4).

Characterization Complete: The reported chemical concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.13 Old and New Charge Floor/Ventilation Trenches - AOI 14

AOI Description: The Old Charge Floor/Ventilation Trenches was located in the southern edge of the Main Building and northern side of the southern New Charge Building (Figure 2). This area contained equipment to give newly manufactured batteries their initial electrical charge on tables.

Previous Investigation History: A previous investigation of concrete in this area did not detect lead concentrations at levels above the delineation criteria (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0053 and DP0055) were advanced to 18 inches bgs (Figure 3). Four other borings were attempted but were not completed due to refusal on a secondary concrete slab beneath the floor. A soil gas sample was not collected because VOCs were not considered likely chemicals of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead and pH (Table 1-3).
- Lead was not detected above the delineation criteria with a maximum concentration of 130 mg/kg in boring DP0055 at 0-0.3 feet bgs (Table 5, Figure 6).
- pH was reported at 7.69 and 4.75, respectively, in the two samples analyzed for pH (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.14 Machine Shop in Northeast Area - AOI 15

AOI Description: The Machine Shop located in the northeast corner of the Main Building (Figure 2). This area contained equipment used for maintenance and repair of facility equipment.

Previous Investigation History: Previous investigations of concrete in this area detected lead at a maximum concentrations of 4,390 mg/kg in chip samples (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0032 and DP0033) were advanced to 5 feet bgs (Figure 3). Soil and soil gas samples were collected from these borings.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead and VOCs (Table 1-3).
- Lead was not detected above the delineation criteria with a maximum concentration of 4.20J mg/kg in boring DP0032 at 0- 0.3 feet bgs (Table 5, Figure 6).
- VOCs were not detected above the delineation criteria in the three samples analyzed from 1 foot bgs (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas was collected at 5 feet bgs in both borings (Table 1-5) .
- VOCs were not detected above the laboratory detection limits (Table 3, Figure 8).

Characterization Complete: The reported chemical concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.15 Hazardous Waste Storage Area/Former Smelter - AOI 16

AOI Description: The Hazardous Waste Storage Area/Former Smelter was located in the northwest corner of the Main Production Building and was approximately 5 feet deep (Figure 2). This area originally contained the smelter until it was moved to the south of this location.

Previous Investigation History: Previous investigations of concrete for lead in this area found a maximum concentration of 2,000 mg/kg (Figure 4).

Haley & Aldrich 2005 Investigation Results: Three borings (DP0022, DP0023, and DP0024) were advanced to a total depth of up to 6 feet bgs (Figure 3).

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths to 18 inches bgs and analyzed for lead, pH, VOCs, and SVOCs (Table 1-3).
- Lead was detected in the five samples analyzed. The maximum lead concentration reported was 5.65 at 0.3 foot bgs in sample DP0023 SS-000-01 (Table 5, Figure 6).
- VOCs were not detected above laboratory detection limits or delineation criteria in the three soil samples collected and analyzed (Table 4, Figure 7).
- SVOCs were not detected above laboratory detection limits or delineation criteria in the three soil samples collected and analyzed (Table 4, Figure 7).
- In the three samples analyzed, pH ranged between 8.16 and 9.42 at 0.3 foot bgs (Table 6).

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 feet bgs at borings DP0022 and DP0023 (Table 1-5).
- VOCs were not detected at concentrations above the delineation criteria. Toluene was detected at a concentration of 12 $\mu g/m^3$ in boring DP0023. Chloroethane was detected in the sample from boring DP0022 at a concentration of 57 $\mu g/m^3$ (Table 3, Figure 8).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.2.16 Maintenance Work Area in Main Production Building - AOI 17

AOI Description: The Maintenance Work Area was located in the northeast portion of the Main Production Building south of the Machine Shop (AOI-15) (Figure 2).

Previous Investigation History: A previous investigation of concrete for lead in the area did not indicate lead impacts (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings, DP0026 and DP0029, were advanced to 5 feet bgs (Figure 3). Both soil and soil gas samples were collected at the two locations.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet and analyzed for lead and VOCs (Table 1-3).
- Lead was not detected above the delineation criteria.. Soil samples DP0026 and DP0029 at 0.3 feet bgs had reported at concentrations of 4.35J mg/kg and 4.30J mg/kg, respectively (Table 5, Figure 6).
- VOCs were not detected above the method detection limits or delineation criteria in the two samples analyzed (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas samples were collected at 5 feet bgs from both borings (Table 1-5).
- VOCs were not detected at concentrations above the delineation criteria. Analysis detected toluene at a concentration of 58 $\mu g/m^3$ in DP0026 (Table 3, Figure 8).
- All other VOCs were below the laboratory detection limits.

Characterization Complete: The reported chemical concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.3 Areas of Interest - South Building (New Charge Building)

The South Building was built following the construction of the Main Production Building with the purpose of adding charging capacity to the existing production facility.

6.3.1 Hydraulic Palletizer in South Building - AOI 18

AOI Description: The hydraulic palletizer was located in the northwest corner of the South Building - New Battery Charge Area (Figure 2).

Previous Investigation History: A previous investigation of concrete for lead did find lead impacts in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0080 and DP0082) were advanced to total depths of 5 feet bgs. Soil and soil gas samples were collected at both locations (Figure 3).

Summary of Soil Sampling

- Nine soil samples were collected at multiple near-surface depths of less than 2 feet bgs and analyzed for lead, CAM-17 metals, TPH, SVOCs, and VOCs (Table 1-3).
- Lead was detected in the eight samples analyzed with the maximum concentration reported at 5,350 mg/kg in the 0.3 foot bgs sample from boring DP0080 (Table 5, Figure 6). A second soil sample collected at 0.3 foot bgs from boring DP0082 had a concentration of 548 mg/kg. Both of these samples exceeded the delineation criteria. Subsequent step-down samples collected at 1 foot and 1.5 feet bgs, respectively, were below the delineation criteria for lead at each location.
- Four other metals were detected above the laboratory detection limits and are listed below. Two of the metals reported exceeded the delineation criteria (Table 4).

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0080	0.3	54.5* (6)
Arsenic	DP0080	0.3	36.2* (11.3)
Chromium	DP0080	0.3	22.6
Zinc	DP0080	0.3	80

* Exceeded the delineation criterion indicated in parentheses.

- Total TPH (carbon chain analysis) was reported at 37,100 mg/kg for sample DP0080-SS000-01 and 26,700 mg/kg for sample DP0082-SS000-01 (Table 4). The primary concentrations of these samples were in the range of TPH as heavy hydrocarbons (C23-C40).
- VOCs were not detected above laboratory detection limits in samples analyzed (Table 4, Figure 7).
- SVOCs were analyzed in two soil samples at 1 foot bgs (Table 4, Figure 7). SVOCs detected and their maximum concentrations are listed below.

SVOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (µg/kg)
Bis(2-ethylhexyl) phthal	DP0082	0.3	2.93
Fluoranthene	DP0082	0.3	0.311J
Phenanthrene	DP0082	0.3	0.492J
Pyrene	DP0082	0.3	0.565

Summary of Soil Gas Sampling

- Soil gas samples were collected from both borings at 5 feet bgs (Table 1-5).
- Analytical results indicated benzene was detected at a concentration of 100J mg/m^3 in DP0080-SG-05 (Table 3, Figure 8). All other compounds were below the detection limits.

Characterization Complete: The reported chemical concentrations of soil samples are less than the delineation criteria with the exception of lead, arsenic, and antimony. Based on the former operations at this AOI, it is anticipated that elevated concentrations of these metals are limited. It is proposed that additional soil sampling be conducted at this AOI during remedial activities as opposed to during a facility investigation.

6.3.2 Hydraulic Lift in South Charge Building Wet Finish Area – AOI 19

AOI Description: The Hydraulic Lift in the Wet Finish Area was located in the east-central portion of the South Building (Figure 2).

Previous Investigation History: No previous investigations for lead in concrete were conducted in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: One boring (DP0072) was advanced to 8 feet bgs (Figure 3). A soil gas sample was not collected because VOCs were not considered likely chemicals of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 8 feet bgs and analyzed for lead, TPH, and pH (Table 1-3).
- Lead was reported at below the delineation criteria in both samples analyzed (Table 5, Figure 6). The maximum reported lead concentration was 244 mg/kg at 0.3 foot bgs.
- TPH was not reported above laboratory detection limit in the one sample analyzed (Table 4).
- Analytical results for pH at 1 foot and 6 feet bgs were 8.14 to 8.61, respectively (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.3.3 Wet Finish Area of South Building (Two Sumps) – AOI 20

AOI Description: The Wet Finish Area was located on the northeastern side of the South Building north of AOI 19 (Figure 2).

Previous Investigation History: No previous investigations for lead in concrete were conducted in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0071 and DP0073) were advanced to a depth of 6 feet bgs. A third boring (DP0074) was attempted but not completed due to refusal. A soil gas sample was not collected because VOCs were not considered likely chemicals of concern at this location (Figure 3).

Summary of Soil Sampling

- Soil samples were collected at 0.3 foot bgs and 6 feet bgs and analyzed for lead and pH (Table 1-3).
- Lead was analyzed in both samples at 0.3 foot bgs, with results being below the delineation criteria. The maximum lead concentration was reported at 45.4 mg/kg in sample DP0071 collected at 0.3 foot bgs (Table 5, Figure 6).
- Analytical results for pH in the three samples analyzed ranged from 8.16 to 8.90 (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.3.4 Final Finish-Label Application Area of South Building – AOI 21

AOI Description: The Final Finish-Label Application Area was located in the southwest corner of the South Building (Figure 2). This area of the plant contained processing equipment to complete production of batteries.

Previous Investigation History: A previous investigation of concrete for lead did not indicate significant lead impacts in this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: One boring (DP0081) was advanced to 1.5 feet bgs (Figure 3). A soil gas sample was not collected because VOCs were not considered likely chemicals of concern at this location.

Summary of Soil Sampling

- Multiple soil samples were collected from near-surface depths of less than 2 feet bgs and analyzed for lead and pH (Table 1-3).
- The maximum concentration of lead detected was 33.6 mg/kg in boring DP0081 at 0.3 feet bgs (Table 5, Figure 6).
- pH was reported at 7.75 in the one sample analyzed (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.3.5 Water Treatment Fixed Unit/Acid Neutralization Area – AOI 22

AOI Description: The Water Treatment Fixed Unit/Acid Neutralization Area was located on the east side of the South Building (Figure 2). This area contained equipment that treated plant process water to neutralize the acid content. The waste water treatment facility neutralized and precipitated metals from the plant influent wastewater. The precipitate was primarily lead.

Previous Investigation History: This area has been referred to as SWMU No. 1. Previous investigations identified lead and acid as chemicals of concern, due to historical industrial processes in this area (Figure 4). However, no sampling was performed due to demolition activities.

Haley & Aldrich 2005 Investigation Results: Two borings were advanced in this area, DP0067 to 5 feet bgs and DP0068 to 18 inches bgs (Figure 3). Soil samples were collected at both locations and soil gas was sampled at boring DP0067.

Summary of Soil Sampling

- Soil samples were collected in both borings at multiple near-surface depths of less than 2 feet bgs and analyzed for lead and pH (Table 1-3).
- Lead was detected in the two samples analyzed at concentrations below the delineation criteria. The maximum lead concentration reported was 45.7 mg/kg at 0.3 foot bgs in sample DP0068 (Table 5, Figure 6).
- The analytical results for pH were reported as 8.26 and 8.31 in the two samples analyzed.

Summary of Soil Gas Sampling

- Soil gas was collected at 5 feet bgs in boring DP0067 (Table 1-5).
- Three VOCs were detected. These VOCs and their maximum detected concentrations are listed below and in Table 3 (Figure 8).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu g/m^3$)
Benzene	DP0067	5	200J* (122)
m,p-Xylenes	DP0067	5	600J
Toluene	DP0067	5	800J

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: The reported concentrations of detected chemicals are less than the delineation criteria with the exception of benzene in soil gas. Delineation is not complete vertically and to the west. Therefore, additional soil gas sampling is recommended.

6.3.6 New Battery Charging Area Floor and Sumps – AOI 23

AOI Description: The New Battery Charging Area was located in the central portion of the South Building (Figure 2). This area was constructed to add increased production capacity to the original facility.

Previous Investigation History: A previous investigation of lead in concrete did not find elevated lead concentrations (Figure 4).

Haley & Aldrich 2005 Investigation Results: Five borings were advanced to a total depth of 18 inches bgs. Soil samples were collected at the five boring locations: DP0075, DP0076, DP0077, DP0078, and DP0079 (Figure 3). A soil gas sample was not collected because VOCs were not considered likely chemicals of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple near-surface depths of less than 2 feet bgs and analyzed for lead and pH (Table 1-3).

- Lead was not detected at concentrations above the delineation criteria. The maximum concentration of lead detected was 301 mg/kg in DP0079 at 0-0.3 feet bgs (Table 5, Figure 6).
- pH concentrations ranged from 7.58 to 8.27 in soil samples from 1 foot bgs (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.3.7 Acid Mix/Exchange Area Sump Pit – AOI 24

AOI Description: The Acid Mix/Exchange Area was located in the northeastern corner of the South Building (Figure 2).

Previous Investigation History: During previous investigations, this area was identified as potentially containing lead and acid impacts to the concrete (Figure 4).

Haley & Aldrich 2005 Investigation Results: During the September 2005 Haley & Aldrich Site walk through, brick lined acid pits, corrosion staining, and eight sulfuric acid tanks were observed. Two borings (DP0069 and DP0070) were advanced to a depth of 18 inches bgs. Soil samples were collected at both locations (Figure 3). A soil gas sample was not collected because VOCs were not considered likely chemicals of concern at this location.

Summary of Soil Sampling

- Soil samples were collected at multiple locations near-surface depths of less than 2 feet bgs and analyzed for lead and pH (Table 1-3).
- The maximum concentration of lead detected was 119 mg/kg in boring DP0069 at 0.3 feet (Table 5, Figure 6). Samples were below the delineation criteria for lead at both locations.
- pH values reported were 8.35 and 8.64 in samples from 1 foot bgs (Table 6).

Characterization Complete: The reported concentrations are less than the delineation criteria. Therefore, no additional sampling is recommended.

6.4 Areas of Interest- Warehouse No. 3 West Building

6.4.1 Hazardous Materials Staging Storage Racks and Trench Area – AOI 25

AOI Description: The Hazardous Materials Staging Storage Racks and Trench Area were located in the northeastern corner of Warehouse No. 3 (Figure 2). This area was previously identified as SWMU No. 2.

Previous Investigation History: A previous investigation of concrete for lead in the area did not find lead impacts (Figure 4). During the Haley & Aldrich September 2005 Site walk through, hydraulic oil, flux materials, and 32-weight oil containers were observed in the area. Based on these observations and historical operations in this area, the following field sampling plan was performed.

Haley & Aldrich 2005 Investigation Results: Fifteen borings were advanced to multiple depths ranging from 4 to 25 feet bgs (DP0139 and 140 had samples taken at 1.5 feet bgs). Fourteen borings were sampled for soil, and 11 boring locations for soil gas. Additionally, three grab samples were collected following demolition of the concrete slab.

Summary of Soil Sampling

- Seventy-two soil samples were collected from 14 boring locations (DP0009, DP0010, DP0011, DP0012, DP0128, DP0129, DP0139, DP0140, DP0152, DP0183, DP098, DP0217, DP0218, and DP0219) and one grab sample location (GS0042) (Figure 3, Table 1-3).
- Soil samples were collected at multiple intervals down to a maximum depth of 25 feet bgs and analyzed for lead, CAM-17 metals, VOCs, TPH, and PCBs (Table 1-3).
- Lead was reported in the 23 samples collected from near surface to depths of less than 5 feet bgs (Table 5, Figure 6). Two samples exceeded the delineation criteria. The maximum concentration detected was 10,600 mg/kg in DP0140-SS-000-01. The other sample above the delineation criteria (DP0012-SS-000-01) had 9,050 mg/kg of lead. Step-down samples at each location were below the delineation criteria.
- Seventeen soil samples were analyzed for CAM-17 metals at depths ranging from 0.3 foot to 5 feet bgs (Table 4). The maximum concentrations reported for detected Site-related metals are shown below. The delineation criteria were exceeded for arsenic and antimony in two samples (Figure 7). Subsequent step-down and step-out samples were below delineation criteria.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0140	0.3	193* (6)
Arsenic	DP0140	0.3	430* (11.3)
Total Chromium	DP0140	0.3	122
Zinc	DP0012	0.3	340

* Exceeded the delineation criteria number indicated in parentheses.

- VOCs were analyzed for in 55 soil samples at depths ranging from 1 foot bgs to 25 feet bgs (Table 4, Figure 7). VOCs reported and their maximum concentrations are shown below. VOCs below the laboratory detection limits are J-flagged. Delineation criteria was exceeded in 3 samples for 1,1-DCA and 13 samples for 1,1-DCE.

VOC Compounds	Boring Number	Sample Depth (feet bgs)	Max. Concentration (µg/kg)
1,1,1-TCA	DP0183	1	27.2
1,1-DCA	DP0217	25	31.5* (14)
1,1-DCE	DP0198	1	202* (16.8)
Benzene	DP0128	10	2.9J
Toluene	DP0128	10	2.5J

* Exceeded the delineation criterion indicated in parentheses.

- TPH was analyzed at 4 boring locations at 1 foot bgs, but was not reported above laboratory detection limits (Table 4).
- The PCB Aroclor-1248 was detected in two of the three samples analyzed. The maximum concentration detected was 0.269 mg/kg in sample GS0042 at 1 foot bgs (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Twenty-six soil gas samples were collected at 10 boring locations: DP0009, DP0010, DP0128, DP0129, DP0141, DP0152, DP0183, DP0217, DP0218 and DP0219 (Table 1-5).
- VOCs were detected above laboratory detection limits in the samples collected and analyzed (Table 3, Figure 8). Listed below are the VOCs detected and the maximum concentration reported. Analytical results detected five VOCs above the delineation criteria in multiple samples(1,1-DCA in 7 samples, 1,1-DCE in 10 samples, 1,2-Dichloropropane in 3 samples, chloroform in 8 samples, and PCE in 3 samples).

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu g/m^3$)
1,1,1-TCA	DP0129	15	52,200
1,1-DCA	DP0129	15	11,700* (2,200)
1,1-DCE	DP0129	15	278,000*
1,2,4-Trimethylbenzene	DP0128	15	36.8
1,2-Dichloropropane	DP0129	15	11,400* (360)
1,3,5-Trimethylbenzene	DP0128	15	11.2
2-Butanone (MEK)	DP0128	15	37.1
4-Ethyltoluene	DP0128	15	13
4-Methyl-2-pentanone (MIBK)	DP0128	15	54.6
Acetone	DP0128	15	233
Benzene	DP0218	5	51.3
Chloroform	DP0128	5	1,720* (670)
Dibromochloromethane	DP0219	5	94
Ethylbenzene	DP0010	5	58
m,p-Xylenes	DP0009	5	400
o-Xylene	DP0009	5	290
Styrene	DP0218	5	70.3
PCE	DP0152	5	1,400* (603)
Toluene	DP0183	5	1,080
TCE	DP0010	5	520
Total Xylenes	DP0219	5	480

*Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: Based upon review of the analytical data for this AOI and adjacent AOIs 26, 31, 37, and 40 the chemical concentrations in this AOI are delineated with the following exceptions:

- Arsenic, antimony and lead in soil to the west of DP0140,
- VOCs in soil gas laterally to the west and in adjacent AOIs, and

- VOCs in soil vertically within the apparent source area and laterally to the west.

Comparison of the reported VOC concentrations in soil to those in soil gas suggest that there may be multiple release points of VOCs in the area and that they may not have been completely identified. Therefore, additional sampling is recommended to complete delineation as noted above.

6.4.2 Maintenance Area in NE Corner of Warehouse No. 3 - AOI 26

AOI Description: The Maintenance Area in NE Corner was located on the north end of Warehouse No. 3 (Figure 2).

Previous Investigation History: No previous investigations were reported for this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: During the Haley & Aldrich September 2005 Site walk through, a second slab was identified below the surface concrete slab. Based on historical use, it was concluded that the chemicals of concern for this location were oil and degreasers. Fifteen borings (DP0111, DP0133, DP0134, DP0135, DP0153, DP0188, DP0189, DP0190, DP0191, DP0192, DP0193, DP0194, DP0195, DP0196, and DP0216) were advanced in this area to multiple depths (Figure 3). Soil samples were collected from 14 locations and soil gas samples were collected at 15 locations.

Summary of Soil Sampling

- One hundred and fifty-nine soil samples were collected from 14 boring locations (DP0111, DP0133, DP0134, DP0135, DP0153, DP0188, DP0189, DP0190, DP0191, DP0193, DP0194, DP0195, DP0196, and DP0216) (Table 1-3).
- Soil samples were collected at multiple subsurface depths up to 25 feet bgs and analyzed for lead, inorganic chromium (VI), CAM-17 metals, TPH, VOCs, and SVOCs.
- Lead was detected in 12 samples analyzed from 0.3 foot to 10 feet bgs in 4 borings (DP0111, DP0133, DP0134, and DP0135). Two samples were reported above the delineation criteria; sample DP0135 from 0.3 foot bgs was reported with a concentration of 16,700 mg/kg and sample DP0111 from 0.3 foot bgs was reported at a concentration of 4,640 mg/kg. Subsequent step-down samples were below the delineation criteria (Table 5, Figure 6).
- Chromium (VI) analysis was performed on two samples from boring DP0111 at 0.3 bgs and 1 foot bgs. The maximum concentration was reported at 0.88 mg/kg at 0.3 foot bgs (Table 5).
- CAM-17 metals were analyzed in nine samples from three borings at depths ranging from 0.3 foot to 4 feet bgs (Table 4). Six metals were reported above laboratory detection limits. Maximum concentrations are listed below. Delineation criteria were exceeded for antimony in two samples, arsenic in five samples, and cadmium in two samples. Subsequent step-down sampling results were below the delineation criteria at three locations.

Metal Compounds	Boring Number	Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0135	0.3	623* (6)
Arsenic	DP0135	0.3	670* (11.3)
Cadmium	DP0135	0.3	9.5
Chromium	DP0111	0.3	46.1
Chromium VI	DP0111	0.3	0.88
Mercury	DP0135	0.3	0.535
Zinc	DP0135	0.3	1,060

* Exceeded the delineation criterion indicated in parentheses.

- VOCs were analyzed in 72 soil samples at depths ranging from 1 foot bgs to 25 feet bgs (Table 4, Figure 7-1). VOCs detected and their maximum concentrations are shown below. The delineation criteria was exceeded for VOCs 1,1,1-TCA, 1,1-DCA, 1,2-DCA, and PCE.

VOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (μg/kg)
1,1,1-TCA	DP0188	1	3,130* (560)
1,1,2-TCA	DP0188	25	52.3* (14)
1,1-DCA	DP0188	1	336* (14)
1,l-DCE	DP0188	1	251* (16.8)
1,2-Dichloroethane	DP0188	5	18.7* (1.4)
Benzene	DP0135	5	4.6J
Dibromoethane	DP0193	1	30.8
PCE	DP0188	1	93.8* (14)
Toluene	DP0135	5	3.4J

* Exceeded the delineation criterion indicated in parentheses.

- One sample was analyzed for SVOCs. Analytical results indicated that no SVOCs were detected above laboratory detection limits.
- TPH was not detected above the laboratory detection limits in the one sample analyzed.

Summary of Soil Gas Sampling

- Fifty-one soil gas samples were collected at 14 boring locations: DP0011, DP0133, DP0134, DP0135, DP0153, DP0188, DP0189, DP0190, DO0191, DP0193, DP0194, DP0195, DP0196 and DP0216 (Table 3, Figure 8). Soil gas samples were taken at multiple depths up to 25 feet bgs (Table 1-5).
- Twenty-one VOCs were detected and are listed below with the maximum concentrations reported. Analytical results indicated nine of the VOCs were above the delineation criteria as indicated below.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu g/m^3$)
1,1,1-TCA	DP0188	21	1,050,000
1,1,2-TCA	DP0188	21	10,500
1,1-DCA	DP0188	21	231,000* [2200]
1,1-DCE	DP0188	21	1,110,000* (88,000)?
1,2,4-Trimethylbenzene	DP0153	5	124
1,2-Dichloroethane	DP0191	22	1,120* [167]
1,2-Dichloropropane	DP0133	15	7,840* [360]
1,3,5-Trimethylbenzene	DP0153	5	36.5
2-Butanone (MEK)	DP0153	5	34.4
4-Ethyltoluene	DP0153	5	37
4-Methyl-2-pentanone (MIBK)	DP0153	5	24.1
Acetone	DP0153	5	222
Benzene	DP0188	15	162* [
Chloroethane	DP0111	5	180
Chloroform	DP0188	15	2,370* (670)
Ethylbenzene	DP0133	5	160
m,p-Xylenes	DP0153	5	224
o-Xylene	DP0111	5	101
Styrene	DP0193	5	145
PCE	DP0188	21	64,200* (603)
Toluene	DP0111	5	2,430
TCE	DP0188	15	2,270* (1,770)
Vinyl Chloride	DP0111	5	470* (44.8)

* Exceeded the delineation criterion indicated in parentheses.

Characterization Complete: Review of the analytical data for this AOI and adjacent AOIs 25, 31, 37, and 40 indicates that chemical concentrations within AOI 26 are delineated with the following exceptions:

- Antimony, arsenic, and lead in soil to the west of DP0111 and south of DP0135,
- VOCs in soil gas laterally to the west and adjacent AOIs, and
- VOCs in soil vertically within the apparent source area and laterally to the west.

Comparison of the reported VOC concentrations in soil to those in soil gas suggest several release points that may have not been fully identified. Review of data indicates that more elevated concentrations of VOCs than those measured may be present atop fine grained materials within the soil column. Therefore, additional sampling is recommended to complete delineation as noted above.

6.4.3 Former Hazardous Waste Storage Area in SW Corner of Warehouse No. 3 - AOI 27

AOI Description: The Former Hazardous Waste Storage Area in the Southwest Corner was located in the southwest corner of Warehouse No. 3 (Figure 2). Area was used to store hazardous waste materials.

Previous Investigation History: Previous investigation of lead within Warehouse No. 3 did not focus on this area (Figure 4).

Haley & Aldrich 2005 Investigation Results: During the Haley & Aldrich September 2005 Site walk through, this area was observed to possibly be part of previously identified areas of concern related to old equipment storage area. Chemicals of concern were identified as lead, acid, HO, dielectric oil, and degreasing solvents. Staining was observed on the south footing wall. Seven borings (DP0098, DP0137, DP0138, DP0211, DP0212, DP0213, and DP0214) were advanced to multiple depths up to 25 feet bgs for soil samples and three borings were advanced to 15 feet bgs for soil gas data. An eighth boring (DP0136) was attempted but was not completed due to refusal (Figure 3). Additionally, two grab samples (GS0028 and GS0029) were collected following demolition of the surface pavement.

Summary of Soil Sampling

- Thirty-four soil samples were collected from seven boring locations (DP0098, DP0137, DP0138, DP0211, DP0212, DP0213 and DP0214) and two grab sample locations (GS0028 and GS0029) (Table 1-3).
- Soil samples were collected at multiple intervals from near surface down to a maximum depth of 25 feet bgs and analyzed for lead, CAM-17 metals, VOCs, SVOCs, and PCBs.
- Lead was reported in all 17 samples analyzed at depths ranging from 0.3 feet bgs to 10 feet bgs (Table 5, Figure 6). The maximum concentration of lead detected was 4,220 mg/kg in DP0137 at 5 feet bgs. Four samples were reported above the delineation criteria(P0098, DP0138, and DP0137 these are only three, not four samples!). Concentrations in subsequent step-out and step-down samples were below the delineation criteria.
- PCBs were analyzed in 27 samples. Aroclor-1248 was detected in 21 samples (Table 4, Figure 7). Seventeen samples were reported above the delineation criteria with maximum concentration of 4,600 mg/kg in boring DP0212 at 0.3 foot bgs. With one exception, DP0212, subsequent step-down sampling was successful in delineating the vertical extent of PCBs.
- Eleven soil samples were collected from five borings and analyzed for CAM-17 metals. Sample depths ranged from 0.3 foot to 5 feet bgs (Table 4). The delineation criteria for lead in three samples (this is an incomplete sentence). Lead concentrations were 1,090 mg/kg in DP0138 at ground surface, 1,750 mg/kg in DP0098 at 1 foot and the maximum concentration was 4,220 mg/kg in DP0137 at 5 feet bgs (Table 4, Figure 7). The detected Site-related metals and their maximum concentrations are listed below.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	DP0138	0.3	4.90J
Arsenic	DP0138	0.3	9
Chromium	DP0137	1.5	27
Zinc	DP0137	1.5	99

- VOCs were analyzed in six soil samples at depths ranging from 1 to 10 feet bgs. VOCs were not detected in soil samples analyzed (Table 4, Figure 7).
- SVOCs were analyzed in three samples at 1 foot bgs. Fluoranthene and phenanthrene were the only SVOCs reported above the laboratory detection limits. Maximum concentrations were 0.867 mg/kg and 0.565 mg/kg, respectively (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Four soil gas samples were collected at 3 boring locations: DP0098, DP0137, and DP0138 (Table 3, Figure 8). Soil gas samples were taken at multiple depths up to 15 feet bgs (Table 1-5).
- One VOC, 1,1,1-TCA, was detected above the laboratory detection limit in three of the four samples analyzed. The maximum concentration was reported at 300 $\mu g/m^3$.

Characterization Complete: Review of the analytical data indicates that only PCBs and lead are present above the delineation criteria and that chemical concentrations are delineated vertically and horizontally with the exception of PCBs. Therefore, additional sampling is recommended to complete delineation of PCBs at this AOI.

6.5 Areas of Interest - Perimeter Areas

6.5.1 Cooling Tower for Mill Strip on North – AOI 28

AOI Description: The Cooling Tower for Mill Strip on North was located in the perimeter area on the north side of the Main Production Building (Figure 2). The cooling towers were used to dissipate heat generated during the milling of the lead into plates during the battery production process.

Previous Investigation History: Previous investigations of lead in concrete in this area indicated lead at a maximum concentration of 1,710 mg/kg in chip samples (Figure 4).

Haley & Aldrich 2005 Investigation Results: Two borings (DP0062 and DP0063) were advanced to a depth of 10 feet bgs (Figure 3). A soil gas sample was not collected because VOCs were not considered a likely chemical of concern at this location.

Summary of Soil Sampling

- Nine soil samples were collected at multiple intervals down to a maximum depth of 10 feet bgs and analyzed for lead and hexavalent chromium (Cr+6) (Table 1-3) (Figure 7-3).

- Lead was detected above the laboratory detection limits in the nine samples collected and analyzed. The maximum concentrations above the delineation criteria were reported in boring DP0062 of 1,940 mg/kg at 0.3 foot bgs, 975 at 1 foot bgs, and 72,900 mg/kg at 5 feet bgs, (Table 5, Figure 6). The other lead concentrations were below the delineation criteria.
- Cr+6 was analyzed in seven samples with three detected above the laboratory detection limit. Concentrations ranged from 3.05 mg/kg to 5.45 mg/kg (Table 5).

Characterization Complete: The reported concentrations are less than the delineation criteria with the exception of lead. Based on the former operations at this AOI, it is anticipated that the extent of elevated lead is limited. It is proposed that additional soil sampling be conducted during the facility investigation.

6.5.2 Electrical Substation - AOI 29

AOI Description: The Electrical Substation on North End of Main Production Building was located in the perimeter area on the north side of the Main Production Building west of AOI 28 (Figure 2).

Previous Investigation History: No previous investigations of concrete for lead were performed in this specific area; however, concrete sampling was performed nearby (Figure 4).

Haley & Aldrich 2005 Investigation Results: One boring (DP0061) was attempted but not completed due to refusal. Due to conflicting schedules between the demolition contractor and the sampling investigation, no samples were collected for analysis.

Characterization Complete: Initial sampling is recommended to assess potential chemical impacts to this AOI. It is proposed that this include the collection of soil samples from two boring locations and analysis for lead and hexavalent chromium.

6.5.3 Former Oil Pump House - AOI 30

AOI Description: The Former Oil Pump House was located in the perimeter area just north of the northeast corner of Warehouse No. 3, north of AOI 26 (Figure 2).

Previous Investigation History: Previous investigations of concrete for lead detected lead at 100 mg/kg in a chip sample in this area. (Figure 4).

Haley & Aldrich 2005 Investigation Results: Three borings (DP0059, DP0192, and DP0197) were advanced to multiple depths up to 25 feet bgs. Additionally, five grab samples (GS0001, GS0021, GS0022, GS0023, and GS0024) were collected at multiple depths following the removal of the concrete floor during demolition (Figure 3). Soil and soil gas samples were collected at each boring location and soil samples from each grab sample location.

Summary of Soil Sampling

- Soil samples were collected at multiple depths ranging from 0.3 foot bgs to 25 feet bgs. Samples were analyzed for lead, CAM-17 metals, TPH, PCBs, VOCs, SVOCs, and PAHs (Table 1-3).

- Lead was analyzed in 11 samples. Detected concentrations ranged from 10.3 mg/kg (GS0001 at 2 feet bgs) to 16,500 mg/kg (GS0022 at 0.3 foot bgs) (Table 5, Figure 6). Six samples were over the delineation criterion for lead.
- Metals were analyzed in ten samples. The detected Site-related metals and their maximum concentrations are listed below and in Table 4. Delineation criteria were exceeded for antimony in five samples, and arsenic in six.

Metal Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Antimony	GS0001	0.3	219 isn't this over the del.limit of 6?
Arsenic	GS0022	0.3	204* (11.3)
Chromium	GS0023	0.3	14.9
Mercury	GS0022	0.3	0.445
Zinc	GS0023	0.3	64.8

* Exceeded the delineation criterion indicated in parentheses.

- Total TPH carbon chain analysis was performed in ten samples. The detected concentrations of total TPH (C4-C40) ranged from 277 mg/kg in GS0023 at 1 foot bgs to 3,673 mg/kg in GS0001 at 0.3 feet. The primary concentrations of these samples were in the oil range of TPH (C23-C40).
- PCBs were analyzed in 11 samples. Aroclor-1248 was detected with concentrations ranging from 0.212 mg/kg in GS0024 at 2 feet bgs to 1,980 mg/kg in GS0001 at 0.3 foot bgs. Nine samples were over the delineation criterion for PCBs.
- Nine VOCs were detected above the laboratory detection limits (Table 4, Figure 7). Delineation criteria were exceeded in seven samples for both 1,1-DCA and 1,1-DCE. Subsequent vertical and lateral samples were below the delineation criteria. Maximum concentrations reported are listed below.

VOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (μg/kg)
1,1,1-TCA	GS0024	0.3	122
1,1-DCA	GS0024	0.3	59.5* (14)
1,1-DCE	GS0024	0.3	160* (16.8)
Acetone	GS0001	3	1340
Benzene	DP0059	1	2.0J
2-Butanone (MEK)	GS0001	3	81.1
Naphthalene	GS0001	0.3	15.7
PCE	DP0192	1	5.8J
Toluene	GS0001	0.3	2.8

* Exceeded the delineation criterion indicated in parentheses.

- Twelve SVOCs were detected in the samples analyzed. These SVOCs and their maximum detected concentrations are listed below and in Table 4 (Figure 7).

SVOC Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
2,4-Dimethylphenol	GS0001	0.3	4.3
2-Methylnaphthalene	GS0023	0.3	0.603J
2-Methylphenol	GS0001	0.3	0.300J
4-Methylphenol	GS0001	0.3	11.2
Anthracene	GS0024	0.3	0.779
Benzoic Acid	GS0001	3.0	2.56
Bis(2-ethylhexyl) phthalate	GS0021	0.3	19.8* (4)
Di-n-butyl phthalate	GS0022	0.3	0.625
Di-n-octyl phthalate	GS0021	0.3	20.6
Naphthalene	GS0023	0.3	1.35
Phenol	GS0001	0.3	5.16
Pyrene	GS0024	0.3	0.914

* Exceeded the delineation criterion indicated in parentheses.

- Twelve PAHs were detected in the samples analyzed. These PAHs and their maximum concentrations are listed below and in Table 4 (Figure 7).

PAH Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration (mg/kg)
Acenaphthene	GS0001	0.3	0.429
Benzo(a)anthracene	GS0001	0.3	0.354
Benzo(a)pyrene	GS0001	0.3	0.079
Benzo(b)fluoranthene	GS0024	0.3	0.164
Benzo(g,h,i)perylene	GS0001	0.3	0.07
Benzo(k)fluoranthene	GS0001	0.3	0.085
Chrysene	GS0021	0.3	0.353
Fluoranthene	GS0024	0.3	0.687
Fluorene	GS0001	0.3	0.567
Indeno(1,2,3-cd)pyrene	GS0023	1	0.021
Phenanthrene	GS0024	0.3	1.07
Pyrene	GS0024	0.3	0.914

Summary of Soil Gas Sampling

- Seven soil gas samples were collected from three borings at depths ranging from 5 feet bgs to 22 feet bgs (Table 1-5).
- Listed below are the 11 VOCs detected and the maximum concentrations reported (Table 3, Figure 8). Analytical results indicated 1,1-DCA (three samples), 1,1-DCE (three samples), benzene (one sample), and PCE (two samples) were above the delineation criteria.

VOC Soil Gas Compounds	Boring Number	Sample Depth (feet bgs)	Maximum Concentration ($\mu g/m^3$)
1,1,1-TCA	DP0192	15	109,000
1,1-DCA	DP0192	15	45,700* ((2,200)
1,1-DCE	DP0192	15	202,000* (220)
Benzene	DP0059	5	300*
Chloroform	DP0059	5	180
Ethylbenzene	DP0059	5	170
m,p-Xylenes	DP0059	5	780
PCE	DP0192	15	2,970* (603)
Toluene	DP0059	5	930
TCE	DP0059	5	250
CFC-11	DP0059	5	130

* Exceeded the delineation criterion indicated in parentheses..

Characterization Complete: Review of the analytical data indicates that chemical concentrations of VOCs, PCBs and heavy metals (antimony, arsenic and lead) in soil exceed delineation criteria at GS0001 and GS0024. In addition, lateral and vertical delineation is not complete for VOCs in soil gas. Therefore, it is proposed that additional soil samples and soil gas samples be collected to complete the delineation/characterization process .

6.5.4 Former Dumpster Pad – AOI 31

AOI Description: The Former Dumpster Pad on NE Corner of Warehouse No. 3 was located in the perimeter area on the northeast corner of Warehouse No. 3 just east of AOI 26 (Figure 2).

Previous Investigation History: No previous investigations of concrete for lead were conducted in this location (Figure 4).

Haley & Aldrich 2005 Investigation Results: One boring (DP0005) was advanced at this AOI to 5 feet bgs. Soil and soil gas samples were collected at this location (Figure 3).

Summary of Soil Sampling

- Multiple soil samples were collected at near-surface depths of less than 4 feet bgs and analyzed for lead, VOCs, and SVOCs (Table 1-3).
- Lead was not detected above the delineation criteria and had a maximum concentration of 49.5 mg/kg at 0.3 foot bgs (Table 5, Figure 6).
- Two samples were analyzed for VOCs and results indicate that 1,1,1-TCA was detected at a concentration of 24.1 micrograms per kilogram ($\mu g/kg$) at 1 foot bgs above the delineated criteria (Table 4, Figure 7). The other VOCs were below laboratory detection limits.
- SVOCs were below laboratory detection limits for the one sample analyzed (Table 4, Figure 7).

Summary of Soil Gas Sampling

- Soil gas was sampled at 5 feet bgs (Table 1-5).